The opinion in support of the decision being
entered today was <u>not</u> written for publication
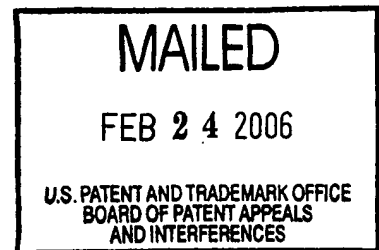and is <u>not</u> binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

<u>Ex parte</u> CHRISTOPHER HUGH STROLLE

Appeal No. 2006-0401
Application 08/869,589[1]

ON BRIEF

Before THOMAS, BARRETT, and DIXON, <u>Administrative Patent Judges</u>.

BARRETT, <u>Administrative Patent Judge</u>.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from

the final rejection of claims 1, 9, 10, 12, 15, and 16.

Claims 2-8, 11, 13, and 14 are allowed.[2]

We affirm.

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[1] Application for patent filed June 5, 1997, entitled
"Method and Apparatus for Performing Bandedge Equalization,"
which is based on and claims priority under 35 U.S.C. § 119(e)(1)
from U.S. Provisional Application 60/019,308, filed June 7, 1996.

[2] Claim 8 should be objected to since it depends from
rejected independent claim 1.

PRIOR DECISION

A prior decision (pages referred to as "D__") was entered on February 11, 2004, in this application by Appeal No. 2002-1376. The decision affirmed the anticipation rejection of claims 1, 9, 10, 12, 15, and 16. This decision is incorporated-by-reference.

BACKGROUND

The invention relates to a method and apparatus for performing equalization of the amplitudes of the bandedges of a broadband signal. The equalization of the amplitudes of the bandedges allows a bandedge timing recovery circuit to produce substantially jitter-free or stress-free timing signals.

Claims 1 and 12 are reproduced below, where the underlining indicates limitations added after the prior decision.

1. Apparatus for equalizing the amplitudes of the bandedges of a broadband signal comprising:

a pre-equalizer for adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal <u>such that the amplitudes of the bandedges are made equal</u>;

a bandedge filter, connected to said pre-equalizer, for extracting a bandedge signal from said broadband signal; and

a bandedge signal processor, connected to said bandedge filter, for generating said control signal in response to said bandedge signal.

12. A method of equalizing the amplitudes of the bandedges of a broadband signal comprising the steps of:

adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal <u>such that the amplitudes of the bandedges are made equal</u>;

extracting a bandedge signal from said broadband signal; and

generating said control signal in response to said bandedge signal.

THE REFERENCE

The examiner relies on the following reference:

Norrell et al. (Norrell)   5,793,821   August 11, 1998
(filed June 7, 1995)

THE REJECTION

Claims 1, 9, 10, 12, 15, and 16 stand rejected under

35 U.S.C. § 102(e) as being anticipated by Norrell.

We refer to the final rejection (pages referred to as

"FR__") entered April 27, 2004, and the refiled examiner's answer

(pages referred to as "EA__") entered July 8, 2005, for a

statement of the examiner's rejection, and to the appeal brief

(pages referred to as "Br__") filed September 29, 2004, and the

reply brief (pages referred to as "RBr__") filed

February 22, 2005, (and refiled September 8, 2005) for a

statement of appellant's arguments thereagainst.

OPINION

Claims 1 and 12

In our previous decision, which we incorporate-by-reference, we found that Norrell discloses "adjusting the amplitudes of the bandedges of said broadband signal in response to a control signal" (claims 1 and 12) because it discloses adaptive equalization to compensate for amplitude and phase distortion at the bandedges (col. 2, lines 10-16):

> [T]he power envelope of a signal can be adversely affected by channel impairments, particularly amplitude and phase distortion at the band edges. To compensate for such impairments, many receiver designs include an adaptive equalizer which compensates for amplitude and phase distortion on the transmission channel in the data recovery path. (Emphasis added.)

See D6. That is, channel frequency response deviates from the ideal of constant amplitude and linear phase (constant delay) and "equalization" compensates for these nonideal characteristics by filtering before further processing is done. An "adaptive equalizer" is one that uses feedback to control the equalization. Norrell teaches adaptive equalization to compensate for amplitude and phase distortion at the bandedges and adaptive equalization adjusts the amplitude and phase in response to a control signal. Norrell is primarily concerned with compensating for delay (phase) distortion, but states that the embodiment "also advantageously compensates for the effects of amplitude distortion on the communications channel" (col. 7, line 67, to

col. 8, line 2) and shows an adaptive equalizer as delay line 506
in Fig. 5 (col. 9, lines 34-36) which is "long enough to
compensate for amplitude and delay distortion in general"
(col. 9, lines 45-46). Norrell discloses that "[prior art]
equalization boosts the desired energy at the bandedges, but also
boosts the unwanted energy near the bandedges" (emphasis added)
(col. 9, lines 14-16), which teaches amplifying at the bandedges
for equalizaiton (D6-7). In our previous decision, we stated
that "[a]mplitude equalization means attenuating or amplifying to
make the amplitudes equal" (D8).

In response to our previous decision, appellant amended
independent claim 1 to recite "a pre-equalizer for adjusting the
amplitudes of the bandedges of said broadband signal in response
to a control signal such that the amplitudes of the bandedges are
made equal" (underlining indicates amendment) and amended
claim 12 to recited "adjusting the amplitudes of the bandedges of
said broadband signal in response to a control signal such that
the amplitudes of the bandedges are made equal" (underlining
indicates amendment). The examiner relies on our statement that
"[a]mplitude equalization means attenuating or amplifying to make
the amplitudes equal" (D8) to meet the new limitations (EA11).

Appellant argues that Norrell does not specifically teach
that the bandedges are to have equal amplitudes (Br13; RBr2). It
is argued that the equalizer delay line 506 at Fig. 5 implements

a time delay and the filter 504 and delay line 506 "merely

compensate for differential delay distortion between the upper

and lower bandedges" (emphasis omitted) (Br15). It is argued

that compensation of time delay differences between the upper and

lower bandedge frequencies is devoid of any teaching of adjusting

the amplitudes of bandedges to make the bandedges equal

(Br15-16). Appellant points out where Norrell discusses

compensating for delay distortion, and argues that this is not

amplitude distortion (Br16). It is argued that to the extent

Norrell compensates for amplitude distortion, Norrell merely

passes the energy in the regions centered at the lower and upper

bandedges and does not teach a control signal to actively adjust

the amplitudes of the bandedges (Br16). It is argued that once

the delay distortion is compensated for in the delay line, the

Lower Band Edge Filter (LBEF) and Upper Band Edge Filter (UBEF)

perform amplitude compensation by attenuating the region between

the lower and upper bandedges, which does not adjust the

amplitudes such that the amplitudes of the bandedges are made

equal (Br17). Appellant argues (Br17; RBr2-3):

> The cited section (Norrell, column 9, lines 11-15) is
> directed to <u>channel equalization</u> and <u>not</u> the specific
> adjustment of bandedges of a broadband signal <u>in response to
> a control signal such that the amplitudes of the bandedges
> are made equal</u>. Channel equalization generally involves
> equalization of the <u>entire frequency response</u> and, as such,
> is <u>not</u> the same as adjusting bandedges such that the
> amplitudes of the bandedges are made equal. The purpose of
> the cited section was to clarify the advantage of sharply
> attenuating the midband, i.e., the region between the LBEF

and the UBEF, in Norrell. Moreover, the cited section is
<u>devoid</u> of any teaching of an adjustment of bandedges to make
them have equal amplitude <u>in response to a control signal,
as generated by the bandedge filter and bandedge signal
processor in Appellant's invention</u>. Thus, the cited section
does <u>not</u> teach the adjusting of amplitudes of the bandedges
of a broadband signal such that the amplitudes of the
bandedges are made equal as in claim 1 of Appellant's
invention.

It is argued that "Norrell teaches adjusting of the amplitude of
the original signal, including the bandedges but nowhere does it
teach specifically making the bandedge amplitudes equal" (Br18).

It is true that Norrell does not expressly state that the
amplitudes of the bandedges are made equal. Nevertheless,
Norrell discloses adaptive equalization to compensate for
amplitude and phase distortion at the bandedges (col. 2,
lines 10-16), which implies that the amplitudes are made equal to
correct for amplitude distortion in the channel. Although
Norrell is concerned with delay distortion, it expressly states
that it also compensates for the effects of amplitude distortion
(col. 7, line 67, to col. 8, line 2; col. 9, lines 1-16 & 44-46).
Norrell uses an adaptive equalizer (filter 504 and delay
line 506) and the adjusting of amplitudes <u>and</u> delay (not just
delay as argued by appellant) is done by adjusting the
coefficients to the filter 504 which control the equalizer. We
disagree with appellant's statement that Norrell is limited to
channel equalization: since the coefficients are based on the
outputs from the LBEF and UBEF, the amplitude and delay

equalization are based on the bandedge signals. In our opinion,
Norrell's teachings of bandedge amplitude equalization implies
that making the amplitudes of the bandedges equal is inherent.
Appellant does not point out the error in our statement that
"[a]mplitude equalization means attenuating or amplifying to make
the amplitudes equal" (D8) by providing any arguments,
explanation, or evidence, such as dictionary definitions, book
descriptions of amplitude equalization, Rule 132 declarations of
what Norrell teaches one skilled in the art, etc., but merely
argues that Norrell does not expressly state that the amplitudes
of the bandedges are made equal. Therefore, appellant leaves it
us to make a technical determination that the amplitude
compensation in Norrell does not inherently adjust the amplitudes
of the bandedges to be equal without providing any evidence.
Appellant takes no risk of making an argument that might be
wrong. If appellant had argued that the Norrell's teaching of
amplitude equalization of bandedges does not make the amplitudes
equal, and provided some explanation and evidence, instead of
just arguing that Norrell does not expressly teach making the
amplitudes equal, this would be a different situation.

To the extent that appellant relies on the limitation of a
"broadband signal," this term is not defined and appellant has
not argued how the term distinguishes over the signal in Norrell.

Appellant argues that Norrell does not teach a pre-equalizer for making the amplitudes of the bandedges equal as recited in claim 1 (Br14).

Claim 1 does not recite that the "pre-equalizer" is an equalizer functionally placed before ("pre-") an "equalizer" and such a limitation will not be implied. The term "pre-equalizer" is just a name unless it is defined by other structure or functional relationships. The filter 504 and delay line 506 perform the recited function of the "pre-equalizer" and, therefore, are considered to be a "pre-equalizer."

For the reasons stated above, we affirm the anticipation rejection of claims 1 and 12.

Claims 9, 10, 15, and 16

The adaptive equalizer in Norrell compensates for amplitude (and delay) distortion and we find that this implies inherently making the amplitudes of the bandedges equal. Appellant has not explained why this is not true or provided any evidence to the contrary, but merely argues that it is not expressly disclosed, and so has not shown error in our finding. If the amplitudes of bandedges are made equal, this must be done by attenuating one bandedge to bring it down to the level of the other bandedge as recited in claims 9 and 15, or by amplifying one of the bandedges to bring it up to the level of the other as recited in claims 10 and 16, or, more likely, by a combination of attenuation and
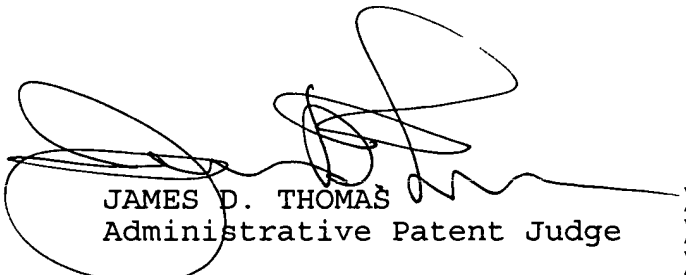
amplification. The anticipation rejection of claims 9, 10, 15, and 16 is affirmed.
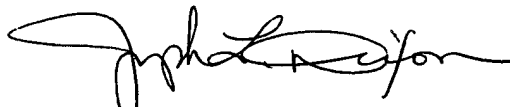
<div align="center">CONCLUSION</div>

The rejection of claims 1, 9, 10, 12, 15, and 16 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv).

<div align="center">AFFIRMED</div>

JAMES D. THOMAS
Administrative Patent Judge   )
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LEE E. BARRETT   )   BOARD OF PATENT
Administrative Patent Judge   )   APPEALS
)   AND
)   INTERFERENCES
)
JOSEPH L. DIXON   )
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